REMARKS

Claims 1-24 are pending and are rejected. Claims 1, 3, 4, 9, 15, 17 and 19 are amended. Claims 2, 6-8, 11, 16, and 20-24 are canceled. Claims 25-31 are added. Reconsideration and allowance of Claims 1, 3-5, 9-10, 12-15, 17-19, and 25-31 are respectfully requested.

Amendments to Specification

Applicants amend the specification to correct clerical errors. No new matter is introduced.

Rejection of Original Claims under 35 USC §102 over Blake

Original Claims 1, 3, and 15 are rejected under 35 USC §102(b) as being anticipated by Blake et al, "An Architecture for Differentiated Services," RFC 2475, December 1998, hereinafter referred to as Blake.

Original Claims 9-10 and 12-14 are rejected under 35 USC §102(b) as being anticipated by Heinanen et al "A Single Rate Three Color Marker," RFC 2697, September 1999, hereinafter referred to as Heinanen.

Original Claims 2, 4-7, 11, 16-19 and 22 are rejected under 35 USC §103(a) as being unpatentable over Blake in view of Heinanen.

Previous Claims 20-21 and 23-24 are rejected under 35 USC §103(a) as being unpatentable over Blake in view of USP 5,875,173 to Ohgane (Ohgane).

Applicant has amended the claims, and discusses the patentability of the amended independent claims over the cited references individually below.

Independent Claim 1

Applicant's Claim 1 (as amended) recites:

A traffic management processor for independently throttling the bandwidth of individual traffic flows to alleviate network congestion, comprising:

an instruction decoder having an input to receive a throttle control instruction identifying a flow identification (ID) of a particular traffic flow to be throttled in response to network congestion, and having an output to provide a throttle enable signal;

a departure time calculator (DTC) circuit coupled to the instruction decoder and having an input to receive the throttle enable signal and configured to calculate a departure time for the incoming packet in response to size and bandwidth parameters associated with the incoming packet, wherein the DTC circuit is configured to selectively adjust the bandwidth parameter by a bandwidth multiplier factor (BMF) in response to the throttle enable signal to selectively delay the departure time of the incoming packet;

a content addressable memory (CAM) device having a plurality of rows, each for storing the flow ID for a corresponding packet and a traffic type indicator (TTI) for the corresponding packet, wherein each row of the CAM device includes a match line.

Independent Claim 1 is neither anticipated by nor obvious over Blake or Heinanen or Ohgane, whether taken individually or in combination.

First, none of the cited references disclose or suggest a DTC circuit that is "configured to selectively adjust the bandwidth parameter by a bandwidth multiplier factor (BMF) in response to the throttle enable signal to selectively delay the departure time of the incoming packet," as recited in Applicant's Claim 1.

The Office Action seems to equate Heinanen's color of packet with the bandwidth multiplier factor (BMF) recited in Claim 1. However, in contrast to Heinanen, Applicant's BMF is a ***factor*** by which the bandwidth parameter is ***adjusted*** in ***calculating the departure time*** to alleviate network congestion, and therefore Applicant's BMF alleviates network congestion by delaying the departure times of packets by the BMF in response to a throttle control instruction that indicates network congestion.

In contrast, Heinanen's color of packet is a well-known ***marker*** that indicates whether a packet is in compliance with a committed information rate ***to implement ingress policing operations*** of a service. For example, a packet is marked green if it doesn't exceed the committed burst size (CBS), it is marked yellow if it does exceed the (CBS) but not the excess burst size (EBS), and red otherwise."[1] Then, "a service may discard all red packets, because they exceeded both the committed and excess

1 See Heinanen, first paragraph of section 1, page 1.

burst sizes, forward yellow packets as best effort, and forward green packets with a low drop possibility."[2]

Thus, Heinanen's color of packet is merely a status indicator that indicates whether a user has exceeded its negotiated bandwidth for policing operations, and can be used to selectively ***discard or forward*** packets; it is not used in calculating or altering packet departure times. In contrast, Applicant's BMF is a factor that adjusts the packet departure times by multiplying the bandwidth factor by MBF during calculation of the packet departure times. Indeed, the Office Action has not pointed to any language in Heinanen that teaches using the color of packet to ***adjust bandwidth factors to alter the packet departure times*** in response throttle control instructions to alleviate network congestion.

Second, none of the cited references disclose "a CAM device having a plurality of rows, each for storing the flow ID for a corresponding packet and a traffic type indicator (TTI) for the corresponding packet" as recited in Applicant's Claim 1.

Ohgane's CAM device 51 stores only departure times; there is no language in Ohgane that discloses or suggests a CAM device that stores a flow ID and a traffic type indicator (TTI) for each corresponding packet.

Accordingly, because none of the cited references, whether taken alone or in combination, disclose or suggest a traffic management processor including a departure time calculator (DTC) circuit "configured to selectively adjust the bandwidth parameter by a bandwidth multiplier factor (BMF) in response to the throttle enable signal to selectively delay the departure time of the incoming packet," and a CAM device "for storing the flow ID for a corresponding packet," Applicant's Claim 1 is patentable over the cited references.

Claims 3-4 depend from Claim 1 and therefore distinguish over the cited references for at least the same reasons as Claim 1.

Independent Claim 9

Applicant's Claim 9 (as amended) recites:

A method for selectively throttling individual traffic flows, comprising:

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2 See Heinanen, page 4, section 5.

receiving an incoming packet including a bandwidth multiplier factor (BMF) and a flow identification (ID), the flow ID indicating to which traffic flow the incoming packet belongs and the BMF indicating an amount by which packet transmission times are selectively altered to delay transmission of the packets;

receiving a throttle control instruction specifying which traffic flow is subject to throttling in response to network congestion, wherein the throttling is unrelated to an ingress policing of a service;

determining whether the incoming packet is part of the traffic flow specified by the throttle control instruction; and

selectively delaying transmission of the incoming packet in response to the determining, wherein the selectively delaying comprises:

receiving packet size and bandwidth parameters for the incoming packet; and

selectively multiplying the bandwidth parameter by the BMF in response to the determining to calculate a delayed transmission time for the incoming packet.

First, none of the cited references disclose or suggest "receiving a throttle control instruction specifying which traffic flow is subject to throttling in response to network congestion, wherein the throttling is unrelated to an ingress policing of a service" and "selectively multiplying the bandwidth parameter by the BMF in response to the determining to calculate a delayed transmission time for the incoming packet," as recited in Claim 9.

As discussed above, Heinanen's color of packet is a marker used in policing operations to identify when traffic has exceeded its negotiated bandwidth; the color of packet is NOT a bandwidth multiplier factor used to multiply the bandwidth parameter to adjust the calculation of the packet transmission time, and the BMF is not selectively employed in response to a throttle control instruction indicating network congestion. Accordingly, Claim 9 is patentable over the cited references.

Claims 10 and 12-14 depend from Claim 9 and therefore distinguish over the cited references for at least the same reasons as Claim 9.

Independent Claim 15

Applicant's Claim 15 (as amended) recites:

A method for selectively throttling any number of traffic flows in response to network congestion, comprising:

receiving an incoming packet including a flow identification (ID), the flow ID indicating to which traffic flow the incoming packet belongs;

receiving a throttle control instruction including a specified flow ID indicating which traffic flow is subject to throttling;

comparing the specified flow ID with the incoming packet's flow ID to generate a throttle enable signal; and

selectively delaying transmission of the incoming packet in response to the throttle enable signal, wherein the selectively delaying comprises calculating a departure time for the incoming packet in response to size and bandwidth parameters corresponding to the incoming packet and in response to a bandwidth multiplier factor (BMF), wherein the BMF selectively delays the packet departure time independently of an ingress policing service.

First, none of the cited references disclose or suggest "receiving a throttle control instruction including a specified flow ID indicating which traffic flow is subject to throttling" and "selectively delaying transmission of the incoming packet in response to the throttle enable signal, wherein the selectively delaying comprises calculating a departure time for the incoming packet in response to size and bandwidth parameters corresponding to the incoming packet and in response to a bandwidth multiplier factor (BMF), wherein the BMF selectively delays the packet departure time independently of an ingress policing service," as recited in Claim 9.

As discussed above, Heinanen's color of packet is a marker used in policing operations to identify when traffic has exceeded its negotiated bandwidth; the color of packet is NOT a bandwidth multiplier factor used to multiply the bandwidth parameter to adjust the calculation of the packet transmission time, and the BMF is not selectively employed in response to a throttle control instruction indicating network congestion. Accordingly, Claim 15 is patentable over the cited references.

Claims 17-19 depend from Claim 15 and therefore distinguish over the cited references for at least the same reasons as Claim 15.

New Independent Claim 25

Applicant's Claim 25 recites:

A traffic management processor for selectively delaying transmission of individual traffic flows to alleviate network congestion, wherein each traffic flow includes a collection of related packets, the comprising:

an instruction decoder having an input to receive a throttle control instruction identifying one or more individual traffic flows to be delayed in response to network congestion, and having an output to provide a throttle enable signal;

a content addressable memory (CAM) device having a plurality of rows, each row for storing a flow identification (ID) for a corresponding packet and each row including a match line, wherein the flow ID indicates which traffic flow the corresponding packet belong to;

match flag logic having inputs coupled to the match lines of the CAM device and having an output to generate a match flag; and

a departure time calculator (DTC) circuit coupled to the instruction decoder and to the match flag logic, wherein the DTC circuit is configured to selectively adjust packet departure times by a bandwidth multiplier factor (BMF) to delay packet transmission in response to the throttle control instruction.

As discussed above with respect to Claim 1, none of the cited references discloses or suggests "a departure time calculator (DTC) circuit coupled to the instruction decoder, wherein the DTC circuit is configured to selectively adjust packet departure times by a bandwidth multiplier factor (BMF) to delay packet transmission in response to the throttle control instruction," as recited in Claim 25, and therefore Claim 25 is patentable over the cited references.

Claims 26-31 depend from Claim 25 and therefore distinguish over the cited references for at least the same reasons as Claim 25.

discloses or suggests "a departure time calculator (DTC) circuit coupled to the instruction decoder and to the match flag logic, wherein the DTC circuit is configured to selectively adjust packet departure times by a bandwidth multiplier factor (BMF) to delay packet transmission in response to the throttle control instruction," as recited in Claim 25, and therefore Claim 25 is patentable over the cited references.

Claims 26-31 depend from Claim 25 and therefore distinguish over the cited references for at least the same reasons as Claim 25.

Support for New Claims

Support for New Claims 25-31 can be found in Applicant's Specification beginning at paragraph [0107] and FIG. 13, as well as in previously submitted Claims 1 and 20.

CONCLUSION

In light of the above remarks, it is believed that Claims1, 3-5, 9-10, 12-15, 17-19, and 25-31 are in condition for allowance and, therefore, a Notice of Allowance of 1, 3-5, 9-10, 12-15, 17-19, and 25-31 is respectfully requested. If the Examiner's next action is other than allowance as requested, the Examiner is requested to call the undersigned at (408) 236-6646.

Respectfully submitted,

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Dated

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